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NATURAL HISTORY

THE
LONDON NATURALIST

The Journal of the
LONDON NATURAL HISTORY SOCIETY

FOR THE YEAR
1923

Price Three Shillings.

PUBLISHED BY THE
LONDON NATURAL HISTORY SOCIETY,
HALL 40, WINCHESTER HOUSE, OLD BROAD STREET, E.C.2.
L. REEVE & Co., LTD., 6, Henrietta Street, Covent Garden, W.C. 2.
1924.

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Arthur William Bacot

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BRITISH MUSEUM NATURAL HISTORY

CONTENTS

PAGE

Arthur William Bacot ... *Frontispiece*

President's Address ... 3

Papers Read to the Society ... 10

Council's Report ... 11

Reports of the Sections—

Archæological Section ... 13

Botanical Section ... 13

Ornithological Section ... 15

Plant Gall Section ... 19

Chingford Branch ... 22

The Medico-Entomological Researches of Arthur William Bacot, by M. Greenwood, M.R.C.S., M.R.C.P. ... 24

Bacot Memorial Evening ... 32

Notes on Collecting in 1923, by E. A. Cockayne, M.A., D.M., F.R.C.P., F.E.S. ... 33

Preliminary Observations on the British Vanessids, by H. D. Williams ... 35

The Birds of Epping Forest ... 36

Archaeological Inspections ... 42

List of Members ... 44

PRESIDENT'S ADDRESS

By E. B. BISHOP.

Read at the Annual General Meeting of the Society on December 4th, 1923.

WHILST, as a society, we are very much concerned—and rightly so—with our own internal well-being, with efforts to increase membership and influence, attendance at meetings and excursions, activities of members, excellence of lectures and exhibits, financial position, and so on, the existence of a far more vital problem for naturalists and nature-lovers is ever present, consciuosly or sub-consciously, in the minds of most of us, especially of those who have a generation or more of experience behind them. We have to face the grim unpalatable fact that the very theatre of our activities, the *raison d'etre* of our existence as a society, is diminishing in area day by day as cities increase, and the domain of wild nature, or anything approaching thereto, correspondingly contracts. As a result of the same process, historic old buildings are offered up as sacrifices on the grimy altar of utilitarianism.

The most gloomy of certain other contingencies, such as the possible approach of another glacial epoch, or the gradual cooling of our globe, are far too remote to add to the despondency of even an ultra-morbid pessimist. But the blindest optimist cannot avoid an encounter with this other many-headed dragon who, here and now, has planted himself down so threateningly in our path.

What is so humorously known as the march of Progress, with its attendant legions of increasing population, will no doubt provide yet more ample scope for the energies of our bacteriologists, and may not seriously interfere with microscopists and students of pond life, but with all due reverence for such distinguished and most necessary colleagues, exalted far above us of the common herd, these exalted ones comprise but a small fraction of those usually classed as naturalists.

At this stage I can almost hear some of you saying, "Well, even if we agree, what is to be done?" I grant, at once, that I have no actual remedy. When *Homo sapiens* begins to justify the name which must have been given him in most bitter irony, matters may improve. Let us hope it will not then be too late.

You can, if so minded, as I am continually, curse most heartily the sorry idiocy which fouls the well-springs of happy existence, by producing too many crowded human lives to permit true enjoyment by any of them of God's supreme gifts. Those who regard this country and most others as already far too densely peopled, who are convinced that over-population is the chief cause of such evils as unemployment, housing shortage, etc., and in matters international, of war itself, can only wish most speedy success to the advocates of birth control, and trust that our near posterity may behold with serenity the altars of Lucina becoming objects of purely archaeological interest, the while devoutly burning incense before the shrine of Malthus.

I am well aware that much of this is in strictness appurtenant to the sociologist, and perhaps I ought to apologise for this brief incursion into his domain. The whole matter is, however, of such urgent importance to the naturalist that I feel bound to lay stress upon it, as an introduction to my address to-night.

Amongst other societies which are doing heroic service on our behalf, with wofully insufficient assistance, both moral and material, there are three which deserve special mention :—The Commons and Footpaths Preservation Society; the National Trust for Places of Historic Interest or Natural Beauty; and the Society for the Protection of Ancient Buildings. The extent of our indebtedness to these loyal friends is only faintly realised even by those of us in touch with them. To the vast majority of people, indeed, I am afraid, to the vast majority of naturalists, they are little more than mere names.

Many a common, and many more footpaths, over and along which most of us here to-night have often been privileged to roam, would to-day be closed to us but for the timely action of the Commons and Footpaths Preservation Society. To-day the National Trust holds as trustee for the people of the nation upwards of 20,000 acres of land—mountains, hills, woodlands, heaths, fens, ponds—free and open to all, and about 20 historic old buildings, to some of which a small charge is made for inspection. All these were acquired through the grace of a few hundred generous donors or subscribers. And how many a noble old building would have been lost to us for ever, or have been hopelessly mutilated, but for the Society for the Protection of Ancient Buildings?

Mention must also be made of the excellent work done by the Royal Society for the Protection of Birds, not only in the interests of scientific ornithologists, but of all bird lovers. Thanks to the activities of its "Watchers" Committee, many rare and much persecuted birds have been enabled to rear their young in these islands. Quite recently this Society was instrumental in stopping winter shooting over one of the largest groups of reservoirs in England, the waters of which are frequently visited by interesting birds. Long may it continue its useful existence!

We do not deserve to have secured for us either hunting grounds for naturalists, or peaceful spots for nature lovers, or venerable old buildings, unless, individually and collectively, we are prepared to assist by every means in our power the doughty champions of our common cause. Too often these champions are left to fight, practically alone, against almost overwhelming odds, and are either defeated or compelled to make an ignominious compromise.

In the shameful years of the late eighteenth century and the early nineteenth, when Enclosure Acts robbed us of our commons by thousands of acres at a time, it was the great landed interest which was our foe, but to-day we have not much ground of complaint in that direction. Indeed, in my wanderings in the by-ways of old England, I am surprised, again and again, at the extent to which one is permitted to roam over private land. The passing away, as landowners, of our old nobility and our squires, however welcome such may be to certain voluble doctrinaires, will be, most certainly, a grievous misfortune to naturalists.

To-day our heritage is too often menaced by those elected to represent us. The Government, as in the recent monstrous attempt by the War Office at Lulworth Cove, is a notorious offender. Municipal councils are perhaps even worse. Take the case of the proposed seizure of a Welsh valley by the Warrington Corporation for a new waterworks scheme. This has received the sanction of the recently defunct House of Commons, despite the protests of its inhabitants and the local county council. Those who have seen the ghastly eyesores which Manchester has created at Longdendale (Cheshire), and Darlington (or is it Stockton?) at Lunedale (Yorkshire), or who have gazed in pained amazement at the "Jumbo" Water Tower at Colchester, may well wonder what next to expect when the average heavy-footed town council is permitted to work its anything but sweet will upon a hitherto smiling landscape.

Occasionally we are encouraged by a great victory over the powers of darkness. Quite recently, following upon the splendidly organised opposition to the proposal of the Croydon Town Council to demolish the old Whitgift Hospital, the contemptuous refusal by the House of Lords, even to consider such a proposition, was one of the most fitting answers to utilitarian vandalism that we have seen in our day. The following extract from the speech of the Marquis Curzon of Kedleston on that occasion will, I trust, commend itself to you all.

> "I am delighted when I see growing up in this country an increasing historical sense that links us by indissoluble bonds with the past which is so swiftly going away. I feel that the preservation of these ancient places, their presence in our midst, the fact that they are there as a daily object to be seen by our children as they grow up, not only imbues a spirit of local pride in the places where they exist, but adds to the romance of our surroundings, and strikes a note of beauty, tranquility and peace in a world of revolting garishness, overcrowding and noise. I think, therefore, that the preservation of these places, wherever they exist, is almost in the category of a national duty, and that they inflict a wound upon the State who, heedlessly or thoughtlessly, for some utilitarian interest, destroy that which can never be replaced. You can make another motor road; you can never build another Whitgift Hospital."

The enormous growth of fast motor traffic threatens the very existence of those hedgerows which are such a feature of our land. The result of merciless clipping, and the thick layer of deposited dust, have so transformed the hedgerows of a main road, that very few naturalists would now choose such spots as hunting grounds. Yet I can well remember, in my young days, a popular little Natural History book, by the Rev. J. G. Wood, entitled "Our Woodlands, Heaths, and Hedges," showing the value which the author then attached to our hedgerows, from the naturalist's point of view.

As regards main roads, I suppose we must bow, however reluctantly, to the inevitable. But when, at enormous expense to the community, we have provided wide main roads, largely for the benefit of a few, surely we should protest, and make every effort to prevent the same machine-like disfigurement of our by-roads, and even country lanes, mainly to gratify a mere lust for speed, which serves no further purpose, useful or otherwise. In making such protest we are voicing the feelings of thousands outside the ranks of Natural History societies, to whom a country lane, its hedgerows a riot of branch and leaf and flower, providing welcome cover for bird and insect, is one of the most priceless treasures of our race. Cut back now and then, as a hedge has been treated from time immemorial, its homely beauty appeals to the eye and heart of every human being with a soul worth saving. Incessantly trimmed low down, so that the motorist can have the widest field of vision, its banks always kept smooth and tidy, it is maimed into little more than a dull featureless line, almost destitute of birds, insects, and plants, and practically incapable in such condition of fulfilling its important functions of being wind-screen and shade for cattle and sheep.

Golf clubs are also serious offenders, especially as they are so frequently allowed to invade commons and other public ground, and the inevitable continual cutting, rolling and smoothing down, is as destructive of wild life as it is offensive to all decent ramblers.

Oil refuse thrown out from ships has resulted in much destruction of bird life, and fouling of our foreshores. Steps have been taken by port and other authorities to remedy this evil, so far as my experience goes with marked success.

So much for actual encroachments, whether on the plea of necessity or otherwise, upon our most priceless possessions. Now let us consider how those possessions are treated by those who have the privilege of using them. In the district in which I live, I am made but too painfully aware how "every prospect pleases and only man is vile." After a week or two of drought, such as we get almost every summer, the view from any hill round about Godalming is rarely free, on any day, from the smoke of a heath or woodland fire, the result of criminal deliberate mischief or almost equally criminal carelessness. Here yet again, the destruction of fauna and flora must be very considerable, whilst the beauty of a common may be sadly impaired for years.

Much correspondence appeared, a few weeks ago, in the "Times" and other newspapers, complaining of the defilement of our countryside with rubbish of all kinds, especially paper, bottles and tins, thrown about by visitors, after enjoying the meals contained therein in the open air. This scattering of rubbish has undoubtedly increased since the advent of the long distance motor-bus, though by no means restricted to the passengers of such vehicles.

In this connection, the following extracts from speeches made upon the occasion of the dedication of an additional 282 acres to Box Hill by the National Trust, are of the greatest interest. They are taken from the "Times," of November 23rd, 1923. Sir Benjamin Brodie, Chairman of the Box Hill Management Committee, in the course of his opening speech, said—

> They had an extremely beautiful property on Box Hill, which was well worth taking care of for the benefit of the public. Those who knew the hill as intimately as he did knew that after Bank Holidays and other days when the public came there in large crowds, the rubbish, paper bags, and glass left about was really beyond anything imaginable. It would be a most excellent thing if something could be done to instil into people's minds the fact that they were responsible for maintaining the amenities of that beautiful place.

And Viscount Grey of Fallodon, in a subsequent address, was even more emphatic—

> The importance of being careful, when visiting places like Box Hill, not to do anything which impaired the amenities of them ought to be impressed on the rising generation particularly. What happened on Box Hill after Bank Holidays resulted simply from thoughtlessness, but after every Bank Holiday about £40 or £50 had to be spent in rendering Box Hill beautiful again. He thought the rising generation might be brought up to feel that places like Box Hill, which were handed over to the National Trust to be held in trust for the community, were really the property of the public. The public ought to feel about them as if they were their own property ; that they had to take a pride in them and treat them with the same care, respect, and regard as anyone did his own private garden.

Unless drastic measures are taken speedily to abate this nuisance, it is reasonably certain that much privately-owned land, upon which the public are now permitted by favour to roam, will be closed to us. Legislation, with by-laws making such practices punishable and subjecting offenders to penalties, should certainly be promoted, and Natural History societies and other associations of decent people should take the lead in pressing for such laws. But, in the meantime, much good might be done if every Natural History society systematically called the attention of its members to this matter, and every member acted as a missionary in the good cause. In this connection, I am happy to be able to state that our local Godalming Natural History Society, in the establishing of which it was my privilege to take some part, calls special attention, on its membership card, to this deplorable practice. For the information and guidance of other societies, the following extract from this membership card may be of service :—

> Whilst zealously maintaining public rights, the Society desires to impress upon its members, and the public generally, that they in their turn must recognise the rights of property owners in the course of their rambles. Special attention is drawn to the following :—

Do no damage to fences, growing crops or woods.
Do not disturb game, or domestic animals.
Do not leave about paper, bottles, or other rubbish.
Do not gather wild flowers, ferns, etc., recklessly or indiscriminately.
Do not cut or scribble your names or initials upon trees, or upon the walls, windows, etc., of Churches or old buildings.

SHUT ALL GATES AFTER YOU.

Is it too much to hope that the Minister for Education, whoever he may be, will be induced to authorise attention to be drawn to this matter in the schools under his charge throughout our land?

The extent to which we allow our rivers and streams to be polluted is saddening and disgusting to every nature lover. Follow any river down from its source on a hill or mountain side to its mouth, and all too soon its purity becomes a steadily diminishing quantity, until finally it is often little better than a sewer. Factories discharge into it their refuse, towns regard it as the natural channel for disposal of their sewage effluents, and thus, too frequently, it becomes as malodorous as it is ugly and depressing. *Homo sapiens*, for all his vaunted superiority, is in this respect on the same unhygienic level as *Bos taurus*, who fouls her drinking water whilst slaking her thirst. Man, the thinker, the master of things, attempts to justify himself by pleading business necessity. The cow, were she in a position to imitate man by adding argumentativeness to her other follies, would no doubt put forward the same plea, with quite equal justification.

As bearing upon this point, a further quotation from the speech of Viscount Grey of Fallodon, already mentioned, may be permissible—

> They might travel through some parts of the country which were naturally most beautiful in hills, valleys, woods, and rivers, and see the rivers black with pollution, the whole country built over, and such trees as were left killed by the fumes from factories. It gave one a feeling of great pessimism to see that. The industry was flourishing, no doubt, but one could not help feeling that there might be something unsound in an industrial civilization which based its prosperity upon turning what was once exceedingly beautiful into something which now was exceedingly ugly.

Just a few words, and they will be but few, to those in our own naturalist ranks. Although we naturalists are usually most quiet and unobtrusive folk, the very last people to interfere with the comfort of others, or to annoy them in any way, yet one must sadly admit that the virtual extinction of more than a few rare birds and insects, and possibly plants, is due, to a large extent, to the selfish rapacity of a few of our colleagues. I should be delighted if something could be done to bring home to such offenders a full sense of their responsibility to their present colleagues, and to all naturalists of the future.

Much of this address has, I am fully aware, been a long recital of woes, possibly wearisome to many of you. If so, I can only ask you to bear with me for a few more minutes, as patiently as you are able. To me, the whole subject is the one thing that really matters for the naturalist in these days. No progress in mechanical science, no increase in national production, no mere growth of towns, can compensate for the divorce of our fellow countrymen from direct contact with dear old Mother Earth. The fruits of the sordid Mammon-worship which has brought about the present state of things are to be seen all around. To the average engineer, a great waterfall is not one of the most awe-inspiring works of the Creator, but merely a potential source of energy, which by tunnel and turbine can be tapped to drive countless clattering wheels in near and distant factories. Smiling stretches of rural England, especially those intersected by main roads, crags and hill-sides, river-banks and meadows, are to the devotees of the muck-rake but suitable vantage spots, whereon to erect blatant enamel and other abominations, which shout the usually non-existent merits of their more or less spurious wares. And the acquiescent slaves of all this sorry business are the ill-mannered crowds who pour forth from the towns and, after a hilarious parody of enjoyment, leave behind them, to the defilement of the countryside, the quantities of rubbish already mentioned.

The lack of reverence displayed by all these classes is, to me, the most apalling feature of our modern life. A mountain summit, a waterfall, any setting of natural beauty, is in very truth an altar of the Most High, to vulgarise or defile which should be regarded by any decent person as an act of sacrilege, akin to the defilement of an altar in a church.

Granted, of course, that commerce should take its due place, that is the whole burden of this discourse. And that place was defined many hundred years ago, by One who bade us consider the lilies, who taught us that life is more than meat, and the body than raiment.

Would that all Natural History societies and kindred bodies throughout our land could be federated into a strong organisation, which, whilst always watchful on all the matters brought forward to-night, could take immediate action in similar cases to those of Lulworth or Croydon. Such action would of course be taken in concert with the great societies I have mentioned, but the actual fighting should not be left solely to them. I do not consider that we have done our whole duty by paying an affiliation fee and passing an occasional resolution.

For my own part, when my voice is finally silent, if it can be said of me by a few intimate friends that I strove to preserve a few rods of my native land pure and undefiled, I desire no better epitaph, and shall envy no great one his columns of obituary notices in the press, nor even his resting-place in Westminster Abbey.

PAPERS READ TO THE SOCIETY

January 2nd.—"Reminiscences of North Queensland," Millais Culpin, M.D.

February 20th.—"Some Bird Photographs," P. J. Hanson.

March 6th.—"A Modern Pilgrimage to Old Shrines," E. Chapman.

March 20th.—"The Medico-Entomological Researches of Arthur William Bacot," M. Greenwood, M.R.C.S., M.R.C.P.

April 17th.—"Preliminary Observations on the British Vanessids," Harold B. Williams, LL.B., F.E.S.

May 1st.—"Types of Distribution in the British Flora," W. Watson.

May 15th.—"Stones of London," H. Spencer Stowell, M.S.A.

June 5th.—"A Bird Watcher's Criticism of Darwinism," C. S. Bayne.

September 18th.—"Botanical Experiences in 1923," E. B. Bishop, R. W. Robbins.

October 2nd.—"A Thousand Miles on the Nile in 1923," The Rev. H. J. Gamble, M.A.

October 16th.—"The Chemistry and Micro-Biology of Soil," L. Eynon, B.Sc., F.I.C.

November 6th.—"Collecting Experiences in 1923" (Lepidoptera). Short Papers by Members.

November 20th.—"Birds of the Shetlands," W. E. Glegg, F.Z.S., M.B.O.U.

December 4th.—President's Address.

COUNCIL'S REPORT

THE present constitutes the Tenth Report of the Council since the amalgamation. In other words the first decade of the society, in its present form, has been completed.

The chief purpose of this annual report is to convey to the members a true idea of the position of the society, which can be done only by stating, as in previous years, the condition of the finances, membership, and attendances.

Although the income from subscriptions and entrance fees is inadequate to the position of the society, the Treasurer's accounts show that not only is this somewhat better than last year, but that our finances, as a whole, are in a less unsound condition. This has resulted from two causes, the replacement of non-paying by paying members and the policy of rigid economy which has been practised for some years. The most optimistic view of this aspect of our affairs could not be rosy, but it is reassuring to know that we have moved in the right direction.

Turning to the question of membership we find that during the course of the year we have lost from various causes ten members, eight branch associates and two country associates. Against this eight members, nine branch associates and two country associates have joined the society. The best guide, as was stated in last year's report, to the condition of the membership is the state of the income from subscriptions, so it may be assumed that some measure of progress has been made.

The consideration of the attendances presents almost a cheerful picture. During the past few years they have made steady progress, and this year the average reaches the satisfactory figure of 31·4 per meeting, an increase of 5·4 on 1922. Thus the average number attending the meetings is nearly 50 per cent. ahead of 1920, and the fact that we have held 15 society meetings this year against twelve last makes this still more satisfactory.

Practical work in the field has received due attention, 28 meetings having been held under the auspices of the different sections. To some of our members these meetings prove especially attractive.

The Council always has in view the importance of giving the fullest possible publicity to the society and its work. In this connection it may be stated that, on the suggestion of Mr. J. P. Hardiman, an arrangement has been made with the Over Seas League, entitling members of that body, home on leave, to attend the meetings of the society. Perseverance along such lines is of great importance to our work.

The Publication Committee has laid before the Council proposals, emanating from Mr. H. J. Burkill, for the improvement of "The London Naturalist." In future, it is hoped, that articles of an original nature, which have not been read at meetings, will appear in the annual publication. Members having such matter are invited to send it to the editor for consideration.

The Chingford Branch still maintains a healthy activity, and the fact that Messrs. Hubbard and Samuelson still continue to occupy the positions of chairman and secretary augurs well for the future.

Under normal conditions the consideration of our first ten years might have been expected to have supplied us with some guidance, with some sort of foundation on which to base our plans for the future. Unfortunately the war has enveloped our activities in a smoke screen which has obscured much from which deductions might have been drawn. The loss of such lessons, apart from material losses, is a serious handicap. It has been written "Progress is born of experience." Looming through the obscurity are certain bold outlines which should not be overlooked. It can be said with safety that the fact that the society was able to continue its work during these difficult times is largely attributable to the amalgamation. The loyalty of the members was severely taxed. It was not found wanting, and in this connection the relatively large sums which have been subscribed to publish the annual volume are noteworthy.

William E. Glegg, *Hon. Sec.*

REPORTS OF THE SECTIONS

ARCHAEOLOGICAL SECTION

THE Section has had a fairly active year; four sectional meetings, three formal and three informal excursions.

The four sectional meetings were occupied chiefly with the discussion of Records, but at that on April 10th an interesting and valuable paper on "Old Bricks and Tiles" was read by Arthur Locke, C.B.E.

The formal visits were to Ickenham Church, Middlesex, on March 24th; Merstham Church, Surrey, on May 5th; and Cliffe at Hoo Church, Kent, on October 13th. Full records were made in each case. The three informal visits to Mickleham Church, Surrey, on April 21st; Mucking Church, Essex, on July 21st; and St. Bartholomew the Great, on December 8th.

During the year one member resigned and two were elected, the membership now being 26. There has been throughout an improved attendance.

The section is indebted to its recorder, Mr. Stowell, for the admirable way in which he has rearranged the recording scheme, so as to insure that a deputy shall be available where any member responsible for a section of the record finds attendance at the inspection impossible.

On February 1st the fourth annual dinner of the section was held at the Ship Restaurant, Whitehall. The guests of the evening were Mr. and Mrs. Stowell.

DOUGLAS B. ALLINGHAM, *Hon. Secretary*,

BOTANICAL SECTION

THE annual meeting of the section was held on December 18th, when all the officers were re-elected.

At the annual meeting of the society Mr. W. Watson was appointed botanical curator, in the place of Mr. L. B. Hall, who, unfortunately, can no longer spare the necessary time for the duties.

During the year the section was responsible for papers at two ordinary society meetings, *viz.*, May 1st, "Types of Distribution in the British Flora," by Mr. W. Watson; and September 18th, "Botanical Experiences in 1923," by Messrs. E. B. Bishop and R. W. Robbins.

The two sectional meetings allotted were occupied by discussions on the order *Rubiaceae*, and the district records of the order *Ranunculaceae*.

The annual week-end at the end of May, was again spent at Birling, Kent, under the leadership of Mr. R. W. Robbins, and was, as usual, successful and enjoyable. Three hundred and thirty-six species were noted, mostly those of the previous year, but some interesting new ones were observed. Amongst the latter may be mentioned *Carex strigosa*, Huds., some puzzling *Violas*, apparently intermediates between *hirta*, L., and *calcarea*, Gregory, and a form of *Silene latifolia*, Rendle and Britten, approaching var. *puberula*, Jord., with pubescent stems and leaves, but with glabrous calyces. *Orchis purpurea*, Huds., was more in evidence than in 1892, but *Salvia pratensis*, L., could not be found on the ground where it was seen the previous year. Possibly it was not yet in flower.

Further field meetings were held as follows :—

April 14th, Chislehurst and Orpington. Leader, Mr. W. Watson. —*Carex strigosa*, Huds., and *Salix aurita*, L., were found at Clapton, the latter in a hedge on clay.

May 12th, Box Hill. Leader, Mr. E. B. Bishop.—*Viola calcarea*, Gregory, was observed ; also abundance of the greyish white-flowered form of *Polygala calcarea*, F. Schultz.

June 19th, Epping Forest (evening excursion). Leader, Mr. R. W. Robbins.—The ponds between Walthamstow and Woodford were examined, and yielded *Ranunculus drouetii*, F. Schultz ; *Hottonia palustris*, L., *Utricularia vulgaris*, L., and *Hydrocharis morsus-ranae*, L. On the muddy margins *Glyceria declinata*, Bréb., occurred in some quantity, and in damp spots were found *Galium uliginosum*, L., *Salix repens*, L. *f. incubacea*, Syme, and *Glyceria fluitans* × *plicata* (=*pedicellata*, Towns.), the last in some abundance.

August 18th, Effingham and Wisley. Leader, Mr. L. G. Payne.—Some interesting plants were seen, including *Agrimonia odorata*, Mill., in abundance at the edge of a wood, *Veronica scutellata*, L., var. *hirsuta*, Weber., in some quantity (with type), *Juncus effusus*, L., × *inflexus*, L. (=*diffusus*, Hoppe.), a large and conspicuous patch, and *Alisma lanceolatum*, With. All, except the first-mentioned, were growing just outside the society's district.

Amongst other noteworthy species observed, during the year (unless stated otherwise), in the society's district, may be mentioned the following:—A form of *Campanula rotundifolia*, L., with corolla divided to its base into five narrow strap-shaped segments, several plants being found in one area ; *Amaranthus retroflexus*, L., as a casual ; *Caltha palustris*, L., var. *Guerangerii*, Bor. ; *Chrysosplenium alternifolium*, L. : *Carex strigosa*, Huds. ; and *C. helodes*, Link. These were found round about Limpsfield and Oxted, by Mr. R. W. Robbins. *Galanthus nivalis*, L., found in Surrey by Mr. L. G. Payne, in great abundance, remote from houses. *Geranium pratense*, L., observed by Mr. L. J. Tremayne, at a station in Middlesex not mentioned by Trimen and Dyer, but seemingly not introduced.

Mr. W. Watson is responsible for the discovery and identifications of the following :—*Polygonum dumetorum*, L., in Abbey Wood, Kent, in 1922 ; *P. bistorta*, L., in a wood at Hayes, Kent, and at Brasted, Kent; *Viola sylvestris*, Kit., *Flore rubro*, hitherto unnoted, along with the very rare *Oxalis acetosella*, L., var. *subpurpurascens*, Duc., at Brasted Hill; *Anagallis arvensis*, L., *Flore violaceo*, at Chipstead; whilst *Rubus holerythros*, Focke, at Hayes Common and St. Paul's Cray Common, does not seem to have been noted previously for Kent, and *R. gratus*, Focke, was found at Burgh Heath, a new Surrey station for this rare species.

Outside the district, Mrs. Wilde has found *Potentilla erecta* × *procumbens* (=*suberecta*, Zinn.) Salop; *Centaurea solstitialis*, L., near Godalming, Surrey; and *Carex pilulifera*, L., var. *longibracteata*, Lange, near Wareham, Dorset. Mr. E. B. Bishop has observed *Centaurea solstitialis*, L., at Strood, Kent; and *Campanula latifolia*, L., in a wood in Surrey, apparently not previously recorded from that particular station.

During the year one species has been added to the records for the northern portion of our area, and 23 for the southern. The most noteworthy of the latter, other than those previously mentioned in this report, are as follows:—*Silene dubia*, Herbich, *Senecio squalidus*, L., *Teucrium botrys*, L., *Herminium monorchis*, Br., *Scilla autumnalis*, L. The second mentioned of these occurred in West Kent, the others in Surrey.

All members are earnestly requested to send to the recorder full lists of plants observed within the society's district, even of the most common species, with dates and, whenever possible, specimens in all cases of rare and critical plants.

R. W. ROBBINS, *Chairman.*
E. B. BISHOP, *Secretary.*

ORNITHOLOGICAL SECTION

THE annual meeting of the section was held on December 18th, 1923, when the following officials were elected to form the Committee for 1924:—Chairman, W. E. Glegg, F.Z.S., M.B.O.U.; Secretary, J. P. Hardiman, B.A., C.B.E.; Recorder, A. Brown; Committee, S. Austin, C. S. Bayne, J. E. S. Dallas, P. J. Hanson. Mr. J. E. S. Dallas was elected to represent the section on the Publication Committee.

The section having been invited by the Chairman of the Publicity Committee of the Royal Society for the Protection of Birds to elect one of its members to assist them in their work, the name of Mr. C. S. Bayne was submitted. Mr. Bayne has been duly appointed and is now serving on the above named Committee.

The section provided the following papers for the society's syllabus, which were read at ordinary meetings, *viz.*:—February 20th, "Some Bird Photographs," by Mr. P. J. Hanson; June 5th, "A Bird Watcher's Criticism of Darwinism," by Mr. C. S. Bayne; November 20th, "Birds of the Shetlands, by Mr. W. E. Glegg, F.Z.S., M.B.O.U.

Two sectional meetings were held, at which the following papers were read, *viz.* :—April 10th, "Bird Life in North-East London," by Mr. R. W. Pethen ; September 4th, "Birds seen at Meudon, near Paris," by Mr. J. P. Hardiman, B.A., C.B.E.

At the Chingford branch of the society ornithological lectures were delivered on the following dates:—May 14th, "Economic Ornithology," by Mr. H. H. Wardle, F.R.H.S. ; and September 10th, when Mr. Pethen repeated his lecture previously given at Winchester House. On January 27th the members of the section visited the ornithological department of the British Museum, when Mr. N. B. Kinnear, C.M.Z.S., M.B.O.U., gave a demonstration on "Local Races."

The programme of monthly field meetings was successfully carried through, the following visits being made :—

Date.		District.	Leader.
January	28.	Tring	... P. J. Hanson.
February	25.	Tilbury Marshes	... P. W. Horn.
March	25.	Barling Marsh ...	... W. E. Glegg.
April	29.	Leighton Buzzard	... O. G. Pike.
May	27.	Wendover ...	... J. P. Hardiman.
June	24.	Limpsfield ...	... R. W. Robbins.
July	29.	Balcombe ...	... C. S. Bayne.
August	26.	Tring	... P, J. Hanson.
September	30.	Stoke Mandeville	... J. P. Hardiman.
October	28.	Elstree	... Miss H. Watkins.
November	25.	Navestock ...	... P. W. Horn.
December	30.	Canvey Island ...	... S. Austin.

The committee of the section held three meetings during the year.

With the publication of the eighth annual report on the birds observed in Epping Forest, in 1923, the committee propose to bring to an end the present extended form of this report which, for the current year, takes the shape of an epitome of the status of each species recorded during the eight years of the investigation. In future years it is hoped to publish a short statement of additions to the list as well as other interesting occurrences.

During 1923 the section contributed 115 schedules of rings used to the "British Birds" marking scheme. One recovery of a "marked" bird has been reported ; a song thrush "ringed" by Mr. W. E. Glegg, in the Scilly Islands, on June 9th, 1920, having been recovered in the same locality on June 17th, 1922.

The photographic collection now stands at 144 sheets, with the addition of 11 sheets during the year.

In response to a suggestion by the committee the British Ornithologist's Union have published, in an abridged and inexpensive form, their official list of British birds, revised to date. The new hand-list was placed on sale last autumn.

The need for further protection of the nesting birds in Epping Forest has been a pressing one for some time past, and the committee was approached with a view to some action being taken. Evidence having been collected and a list of suggestions prepared, both were submitted to the Royal Society for the Protection of Birds, who were so far impressed as to carry out an independent investigation. As a result a strong representation was made to the Epping Forest Committee, of which but scant notice appears to have been so far taken. The matter is not to be allowed to drop.

As the result of negotiations which have been carried on for some time by the Royal Society for the Protection of Birds, the Metropolitan Water Board has decided to stop the shooting of wild fowl which took place annually at Walthamstow Reservoirs. The society has been associated with these negotiations, which have ended so successfully, and members of the section have rendered practical assistance.

Four species new to the society's district have been recorded, making the total number 172. These new occurrences are:—*Regulus ignicapillus ignicapillus* (Firecrest), October 21st, Tadworth, Surrey, reported by Howard Bentham (see "British Birds," vol. 17, p. 165); *Numenius phoeopus phocopus* (Whimbrel), September 9th, Staines Reservoir, reported by W. E. Glegg; *Chlidonias niger niger* (Black Tern), September 9th, Staines Reservoir (5), reported by W. E. Glegg; and *Coturnix coturnix coturnix* (Quail), November 19th, Sewage Farm, Ponder's End, reported by P. J. Hanson, in whose possession the skin is.

One new nesting record is as follows:—*Nyroca ferina ferina* (Pochard), 2 adults and 5 young, Walthamstow Reservoirs, July 29th, and 1 adult and 4 young, same place, October 6th, both reported by A. Brown.

Other interesting records for the year are as follows:—*Corvus cornix cornix* (Hooded Crow), October 7th, near Elstree, reported by Miss H. Watkins; *Spinus spinus* (Siskin), December 2nd, Highams Park (6-10), reported by W. E. Glegg; December 16th, same place (12), reported by S. Austin and J. P. Hardiman: *Emberiza calandra calandra* (Corn Bunting), July 28th, Staines Reservoir (singing), reported by W. E. Glegg; *Anthus spinoletta petrosus* (Rock Pipit), October 28th, Elstree Reservoir, reported by C. S. Bayne, W. E. Glegg, and P. J. Hanson; *Lanius excubitor excubitor* (Great Grey Shrike), December 18th, 1922, Walton-on-the-Hill, Surrey, reported by Howard Bentham (see "British Birds," vol. 17, p. 165); *Saxicola torquata hibernans* (British Stonechat), April 15th, Walton Heath, Surrey (pair), reported by J. E. S. Dallas; May 26th, Cuckoo Hall Farm, Edmonton, reported by W. E. Glegg; September 29th, Fairmead Bottom, Epping Forest, 2 ♂s and 1 ♀, reported by P. D. Hayward, per S. Austin; December 8th, Staines Reservoir (2), reported by A. Holte Macpherson; December 12th, Brent Reservoir, reported by J. P. Hardiman; December 15th, Petersham Park, reported by J. E. S. Dallas; *Oenanthe oenanthe oenanthe* (Wheatear), July 28th, Staines Reservoir (2 or more), reported by W. E. Glegg; August 25th, Walthamstow Reservoirs (1 or 2), reported by W. E. Glegg; *Riparia riparia riparia* (Sand-Martin), on May 28th, several birds observed at Rye House Station, G.E.R., carrying nesting material and disappearing into holes in the brickwork of the side of the platform, just over the metals (see "British Birds," vol. 17, p. 187); *Dryobates minor comminutus* (British Lesser Spotted Woodpecker), December 13th, Walthamstow Reservoirs, recorded by P. W. Horn; *Micropus apus apus* (Swift), early date, April 22nd, Walthamstow Marsh (2 seen, morning), reported by R. W. Pethen; same day, Springfield Park, Clapton (2 seen morning, 5 afternoon), reported by A. Brown; *Tyto alba alba* (Barn-Owl), nested in the roof of an old house on Clapton Common, two broods (each of 2 birds) being hatched out, one in July and the other in November, reported by C. Hollocks, per A. Brown; *Carine noctua mira* (Little Owl), July 19th, nested at Botany Bay Farm, Enfield, reported by H. Sagar; *Anas strepera* (Gadwall), November 4th and 5th, Round Pond, Kensington Gardens, ♂, a park keeper reported that the bird had been seen on the pond for two years; also reported by W. M. Crook and by G. C. Low; Dr. Low also reported a second drake in the autumn of 1922 at the same place (see "British Birds," vol. 17, pp. 165 and 193); *Mareca penelope* (Wigeon), December 8th, Staines Reservoir, reported by A. Holte Macpherson; December 16th, same place (a few), reported by W. E. Glegg; *Spatula clypeata* (Shoveler), August 11th (3), August 8th (1), and August 25th (3), Walthamstow Reservoirs, reported by W. E. Glegg; September 3rd, Strawberry Hill Pond, Epping Forest, reported by Keeper Stubbs, per S. Austin; December 16th, Staines Reservoir (2 or more), reported by W. E. Glegg; *Nyroca marila marila* (Scaup), November 4th and 5th, Round Pond, Kensington Gardens, reported by W. M. Crook (see "British Birds," vol. 17, p. 165); December 15th, Staines Reservoir (1), reported by A. Holte Macpherson; December 29th, Staines Reservoir, reported by C. A. Cresswell, per A. Holte Macpherson; *Glaucionetta clangula clangula* (Golden-eye), December 8th, Staines Reservoir, reported by A. Holte Macpherson; December 16th, same place (a number, both sexes), reported by W. E. Glegg; *Mergus merganser merganser* (Goosander), December 8th, Staines Reservoir (4), reported by A. Holte Macpherson; December 16th, Staines Reservoir (1), reported by W. E. Glegg; December 26th, Staines Reservoir (11, two being old males), reported by A. Holte Macpherson and J. Rudge Harding; *Mergellus albellus* (Smew), December 8th, Barnes Reservoir (♀ or young), reported by A. Holte Macpherson; December 16th, Staines Reservoir (1), reported by W. E. Glegg; *Scolopax rusticola rusticola* (Woodcock), February 14th, Fairmead, Epping Forest, reported by Keeper Stubbs, per P. W. Hayward and S. Austin; November 25th, High Beach, Epping Forest, reported by Mr. Roper of Loughton, per. P. W. Hayward and S. Austin; November 30th, Warren, Epping Forest, reported by Keeper Stubbs, per P. W. Hayward and S. Austin; *Erolia alpina alpina* (Dunlin), August 18th, Walthamstow Reservoirs, reported by W. E. Glegg; *Tringa totanus totanus* (Redshank), December 1st, Barn Elms Reservoir, reported by A. Holte Macpherson; *Tringa hypoleucos* (Common Sandpiper), April 27th, Connaught Water, Epping Forest, reported by H. C. Playne, per S. Austin; July 28th, Staines Reservoir (9), reported by W. E. Glegg; August 11th (2), and 18th (2), Walthamstow Reservoir, reported by W. E. Glegg; September 9th, Staines Reservoir, reported by W. E. Glegg; *Tringa ochropus* (Green Sandpiper), July 19th, Botany Bay Farm, Enfield (2), reported by W. E. Glegg; August 11th, Walthamstow Reservoirs, reported by W. E. Glegg; July 9th (4), and 19th (2), and August 12th (1), Holly Hill Farm, Enfield, reported by P. J. Hanson; December 13th, Walthamstow Reservoir, reported by P. W. Horn; *Charadrius hiaticula hiaticula* (Ringed Plover), September 9th, Staines Reservoir, reported by W. E. Glegg; *Larus canus canus* (Common Gull), December 15th, Richmond, reported by J. E. S. Dallas; *Fratercula arctica graboe* (Puffin), October 28th, bird picked up alive, but died subsequently, reported by L. G. Payne; *Podiceps cristatus cristatus* (Great Crested Grebe), September 9th, Staines Reservoir, party of 205, reported by W. E. Glegg; *Podiceps nigricollis nigricollis* (Black-necked Grebe), September 9th, Staines Reservoir, reported by W. E. Glegg; *Rallus aquaticus aquaticus* (Water Rail), July 9th, Holly Hill Farm, Enfield, reported by P. J. Hanson; *Columba oenas* (Stock-Dove), July 19th, Holly Hill Farm, Enfield, reported by P. J. Hanson; September 12th, High Beach, Epping Forest, reported by P. J. Hanson; December 15th, Petersham Park (20), reported by J. E. S. Dallas.

We have to acknowledge with our thanks help rendered in our recording by a number of correspondents.

Seven new members of the society have joined the section during the year, *viz.*:—Mr. and Mrs. K. O. Nash, and Messrs. A. Holte Macpherson, F.Z.S., R. W. Pethen, J. Rudge Harding, O.B.E., H. Sagar, and R. H. Trench. Our member, Mr. F. G. Mann, Ph.D., B.Sc., A.I.C., has also joined the section.

It is announced, with regret, that Mr. S. Austin has resigned the position of secretary which he has held for four years. The section in accepting his resignation desires to place on record an appreciation of the valuable services which Mr. Austin has rendered to the ornithology of the society during this period. The section is fortunate in obtaining Mr. J. P. Hardiman to fill the vacancy created.

W. E. Glegg, *Chairman.*

PLANT GALL SECTION

ONE paper was read to the section during the year, on "The Galls on Rubiaceae." Members have taken part in seven expeditions to places in the neighbourhood of London. Individual members have done good work in various localities, as the list of species of galls testifies.

The following notes have been compiled from the records of species sent in, most of which have been exhibited at the society's meetings.

On *Clematis vitalba*, L., *Eriophyes vitalbae*, Can. The mites were seen on examination of distorted leaves, from near Leatherhead. October.

On *Cardamine pratensis*, L., *Eriophyid*. Flowers deformed and distorted. Resembles Houard's 2656 on *C. hirsuta*. Orpington. May. (R. W. Robbins.)

On *Silene latifolia*, Rendle and Britten, *Hyalopterus melanocephalus*, Buckton. Near Harefield. September.

On *S. maritima*, With. The white *Cecidomyid* larvae recorded last year as galling this plant (*Contarinia ?* Houard, 2266) from Cornwall, were found near Paignton, South Devon. August.

On *Lychnis alba*, Mill. Flower heads galled by dark claret-coloured Aphides, Harefield. June. (E. B. Bishop.)

On *Stellaria graminea*, L., *Eriophyes atrichus*, Nal. Kingston Vale Batchworth Heath. September.

On *Hypericum perforatum*, L., *Zeuxidiplosis Giardiana*, Kieff., Oxted. October. (R.W.R.)

On *Malva moschata*, L., *Eriophyes gymnoproctus*, Nal., Birling. (L. B. Hall.)

On *Tilia platyphyllos*, Scop., *E. tiliae*, Pagenst., var. *exilis*, Nal., Galmpton, Devon.

On *T. vulgaris*, Hayne. (1) The last named mite, near Fulmer, near Leatherhead, and near the Black Pond, Esher. (2) *E. tetratrichus*, Nal. Churston Ferrers, S. Devon, and near Fulmer, Bucks.

On *Rhamnus frangula*, L. (1) *Thrips* sp. distorting the flowers and young leaves, Oxshott. (Dr. Cockayne.) (2) Distorted leaves, pouched, with the edges in contact along the margins. Contains cast skin of Aphis. Resembles Houard's 4064. Near Leatherhead. October.

On *Medicago lupulina*, L. Leaves unopened, *Perrisia* sp. Limpsfield. (R.W.R.)

On *Acer* sp. (foreign). *Eriophyes* sp., corresponds with Houard's 3977. Near Leatherhead. October.

On *Aesculus hippocastanum*, L., *E. hippocastani*, Fockeu. Two localities near Leatherhead, also Ealing, and Holly Hill, Bucks.

On *Vicia sativa*, L., *Perrisia viciae*, Kieff. Galmpton, S. Devon.

On *Rubus idaeus*, L., *Cecidomyid*. Round or oval swellings on the stems, multilocular and multilarval. Larvae orange coloured. Abinger, Surrey. Previously recorded from near Hackness, Scarborough.

On *Rubus* sp., *Perrisia plicatrix*, H. Low. Remarkably abundant this year, both near London and in South Devon.

On *Crataegus oxyacantha*, L., *Eriophyes goniothorax*, Nal. Near Batchworth Heath, Middlesex.

On *Silaus flavescens*, Bernh., *Perrisia Dittrichi*, Rubs. Plentiful on Epsom Common.

On *Heracleum sphondylium*, L., *Contarinia Nicolayi*, Rubs. Near Swanage. (E.B.B.)

On *Cornus sanguinea*, L., *Oligotrophus corni*, Giraud. Found in two localities in South Devon, where the geological formation is the Red Devonian. Hitherto I have only seen the gall on the chalk.

On *Rubia peregrina*. L. (1) *Eriophyes rubiae*, Can. (Houard, 5322.) Bud gall. Near Broadsands Bay, S. Devon. (2) *E. ? rubiae*, Can. (Houard, 5322.) Leaf margin rolled upwards. Three localities, S. Devon. These two galls seem to be distinct species.

On *Galium verum*, L. (1) *E. galiobius*, Can. Abundant in one locality in Middlesex, where the grass is usually mown for hay or browsed by horses. Never noticed there before though I have visited the spot for years. (2) *Cecidomyid.* (Houard, 7372.) With the last. Previously recorded on *Galium mollugo.*

On *G. saxatile*, L., *Phyllocoptes anthobius*, Nal. Plentiful round London up to the drought of 1921, which killed many of the plants. Not seen in 1922. Now found again on Epsom Common.

On *G. aparine*, L., *Eriophyid?* The white tipped form recorded three years ago from near Heathrow, Hounslow, was found again a few miles further west than its previous locality, but no mites were detected.

On *Centaurea scabiosa*, L. (1) *Aulax scabiosae*, Giraud. Brockham Downs and Tothill, Surrey. (2) *A. Rogenhoferi*, Wachtl. Harefield and Tothill.

On *Vaccinium myrtillus*, L., *Eriophyid.* Margins of leaves swollen, corrugated, and rolled over the upper surface. Dark red in colour. Clova, Perthshire. (I. H. Burkill.)

On *Fraxinus excelsior*, L., *? Eriophyes.* Base of the leaves discoloured reddish brown. The underside covered with a mass of hairs of the same colour. Churston Ferrers, S. Devon.

On *Cynoglossum officinale*, L. *Aphis* sp. curling the leaves. Birling.

On *Veronica montana*, L., *Perrisia veronicae*, Vallot. Limpsfield. (R.W.R.)

On *Thymus chamaedrys*, Fr., *Janetiella thymicola*, Kieff. Birling. (R.W.R.)

On *Ulmus glabra*, Huds. (1) *Oligotrophus Lemeei*, Kieff. Herronsgate, Bucks, and Leatherhead. (2) *Eriophyes.* White hairs on the veins on underside of the leaf. Leatherhead.

On *Betula alba*, L., *Eriophyes.* Dense felting of straw coloured hairs on young twigs at the base of the trunk. Braemar, N.B. (I.H.B.)

On *Quercus pedunculata*, Ehrh. In the summer of 1921 I introduced into a clump of young oaks of about five years of age some fresh leaves galled by *Andricus curvator*, Hartig. I did not notice any galls of *Andricus collaris* that autumn, but next summer there were fresh galls of *A. curvator* on these bushes, followed by *A. collaris* in October. This year again both forms have been seen. Thus it appears that in the open *A. collaris* flies may emerge in the following spring after the formation of the galls.

On *Q. coccinea*, Wangenheim, *Eriophyes* sp. (Houard, 2006.) Surrey.

On *Q. cerris*, L., *Andricus circulans*, Mayr. The galls and flies were plentiful in one Surrey locality this year. I had flies under observation for some days, but I saw no attempt at oviposition.

On *Q. ilex*, L., *Eriophyes ilicis*, Can. This mite has now spread to a second tree in the Leatherhead district, and seems to be well established in its new situation.

On *Salix pentandra*, L., *E. triradiatus*, Nal. Now established on five of the trees near the windmill, Wimbledon Common, having apparently spread from some *S. fragilis* near, which are heavily galled.

On *S. triandra*, L. (1) *Rhabdophaga heterobia*, H. Low. Rosettes. (2) *Perrisia terminalis*, H. Low. (3) *Pontania bridgmani*, Cam. All three from Broadsands Bay, S. Devon.

On *S. fragilis*, L., *Eriophyes triradiatus*, Nal. A tree in Red Lion Square, Holborn, attacked by this species, was severely pruned some four years ago, but three small galls were left. The mite has spread over the tree again, and in October 83 galls were counted there.

On *S. purpurea*, L., *?Rhabdophaga heterobia*, H. Low. Female catkin buds attacked and aborted. Barnes Common.

On *S. viminalis*, L., *E. triradiatus*, Nal. The colony on a tree in Gunnersbury has died out this year, as has that on *S. caprea*, L.

On *S. repens*, L., ? *Rhabdophaga heterobia*, H. Low. Female catkins attacked and aborted. Wimbledon Common.

On *Populus tremula*, L., *Perrisia populeti*, Rubs. Wimbledon Common, and elsewhere; plentiful this year.

On *P. nigra*, L., *Pemphigus bursarius*, L. Has been very scarce. *P. affinis*, Kalt., not recorded at all. *P. spirothecae*, Pass., only on three trees, a few. *P. marsupialis*, Courchet., only once seen. This seems remarkable as Aphides were so abundant generally.

On *Taxus baccata*, L., *Eriophyes psilaspis*, Nal., was found attacking the individual leaves as well as the buds, and causing torsion. Leatherhead.

On *Phragmites communis*, Trin., *Lipara lucens*, Meigen., was abundant last January at the Black Pond, Esher. Owing to the low level of the water it was possible to get well out among the reeds.

On *Molinia caerulea*, Moench., *Oligotrophus ventricolus*, Rubs. Stoke Common, Bucks, and Epping Forest.

On *Agropyron junceum*, Beauv., *Isosma graminicola*, Giraud. Paignton.

Harold J. Burkill, *Hon. Sec. and Recorder.*

CHINGFORD BRANCH

THERE is nothing special to report in the Chingford Branch for 1923. The attendances at the meetings were a little lower than in 1922, the average being 29·76 against 30·75. The lowest was 18 and the highest 59. The falling off was entirely in the second half of the year, and may be attributed to the frequency of bad weather, the average for the first half of the year being 34.

The following lectures were delivered :—" Some Interesting Common Insects," by C. L. Withycombe, M.Sc.; " Lands End," by J. E. S. Dallas; " The Freshwater Fishes of London," by P. W. Horn;

"The Earth as It Was Before the Time of Man," by C. O. Harvey, B.Sc.; "Economic Ornithology," by H. H. Wardle, F.R.H.S.; "Bird Life in North-East London," by R. W. Pethen; "Sunshine and Its Influence on Living Plants; A Romance," by T. F. Harvey, F.I.C., F.C.S.; "The Fungi of Epping Forest," by F. G. Gould; and "The Gothic Architecture of London," by S. Leigh Hunt. In addition there was a visit to the Scout Master's Headquarters, at Gillwell Park, and an informal ornithological ramble in Epping Forest. Weather conditions prevented other outdoor excursions from being carried out.

The branch is greatly indebted to Mr. Ross for his interest in the work and for his services as lanternist on every occasion when the lantern is used.

E. Samuelson, *Secretary*.

THE MEDICO-ENTOMOLOGICAL RESEARCHES OF ARTHUR WILLIAM BACOT

By M. GREENWOOD, M.R.C.S., M.R.C.P.

Extract of a paper read on March 29th to the Society.

(*A fuller account of the life work of Mr. A. W. Bacot has been prepared by Drs. Greenwood and Arkwright for the "Journal of Hygiene."*)

ARTHUR WILLIAM BACOT was born in London on April 28th, 1866, the third son and fourth child of Edmund Alexander and Harriet Bacot.

The family is of Huguenot descent in the paternal line, and an account of some of the members will be found in Samuel Smiles' book, "Huguenots in England and Ireland" (p. 431). In physique Arthur Bacot showed traces of his descent. He told me that on his first continental trip his companion would address a passer-by in voluble but Anglicised French, while he himself, not having the gift of tongues, stood silent. Sooner or later there would come a conversational deadlock, the Frenchman would look round in despair and, catching sight of Bacot, his face would light up, he would begin a fluent discourse only to be plunged into deeper gloom by the discovery that this too was an Englishman.

Several of Bacot's ascendants and collaterals were members of the medical profession; his great uncle, John Bacot, served with distinction in the Peninsular War, and was the author of a treatise on Venereal Diseases, published in 1829. An older member of that generation, Frederick Bacot, a young Army Surgeon, fell at Seringapatam.

As a child, Arthur Bacot was delicate and often ailing, although he was proficient at most outdoor sports, an excellent swimmer and skater (as a man he was a first rate skater, and passed the speed tests of the National Skating Association) by his eleventh year. His delicacy, called at the time "Anaemia of the Brain," was perhaps what we should now call psychoneurotic. All the children were, as Miss Bacot tells me, introspective and sympathetic to animals, a tendency encouraged and shared in by their father. Whatever we may think of its aetiology, the psychological condition led to great irregularity of school attendance, and had important consequences in after life.

Psychologists tell us that the experiences of childhood are far more potent in determining what we shall become than anything which happens afterwards, and certainly many of Bacot's characteristics, both trivial and important, can be very plausibly related to his childish experiences. To begin with a trivial point, which, trivial as it was, impressed all his associates, he retained into manhood most of the likes and dislikes of the average delicate child in eating and drinking. He enjoyed at the age of fifty what a boy of five enjoys, and it was a melancholy thing to sit next to him at a " grown up " dinner of many courses. He was also very irritating to folk who dieted themselves on principle. To such, a man who wore no hat and lunched off bread and jam, cheese and chocolates seemed a long lost brother, and they were very cross when they found he was not a vegetarian, in fact enjoyed roast chicken, and had no conscientious scruples against keeping a hat in his city office (he did it, he told me, because bank cashiers and city shopkeepers with tills got nervous if a hatless man came in). They failed to perceive that he did, or abstained from doing, trivial things not on principle but because he had retained the tastes of a boy.

This was a trifle, more significant were two consequences.

Being often away from school and therefore thrown on his own resources, the introspection of a child, the faculty of weaving romances out of common things was strengthened by practice, and was perhaps the basis of Bacot's powers of sympathetic imagination. His attitude towards birds and beasts retained something childish—in the good sense—to the end. He never canted, he did not call them his " little brothers," neither did he adopt the intellectual manner of the schoolmaster abroad, or treated fleas as the nicely educated young man is apt to treat a boy's brigade.

The other consequence was that he was cut off from all chance of escaping from his economic environment by the usual methods. He was too irregular in attendance to get the best out of the school. He left school with no knowledge of foreign languages, and without such knowledge of the orthodox branches of science as might have enabled him to compete with hope of success for grant earning " Science and Art " certificates, or for a scholarship at the Royal College of Science.

Bacot's difficulty in acquiring languages was not wholly due to an irregular early education. His visual memory was innately more powerful than his auditory memory ; it was always remarkable that while he received and interpreted visual stimuli without seeming to attend to them, no effort of voluntary attention enabled him to retain unfamiliar pronunciations.

He also seemed to have difficulty in expressing himself clearly on paper, though in conversation he was a brilliant talker.

Bacot's initiation to the study of natural history only differed from that of any boys blessed with intelligent parents and brothers in its early date. He started butterfly hunting at five, and his sister recollects that at the age of six the child was saddened by his kindergarten mistress' ignorance of butterflies and caterpillars.

Bacot's delicate health kept him out of the city until he was sixteen, but after that he was employed for the next twenty-seven years in a city office. He joined the local Natural History Society (now the London Natural History Society) and some years later joined the

Entomological Society of London. It would not be easy to imagine external conditions less propitious for the development of scientific ability, but between 1893 and 1909 he published more than fifty separate papers, and contributed largely to Tutt's monumental treatise on the British Lepidoptera.

Bacot's first published contribution to natural history was a note on the variation of *Saturnia carpini*, printed in the "Entomologist's Record" of 1893 (vol. iv., p. 199). His first long paper was read to the City of London Entomological and Natural History Society in 1895, and printed in the "Entomologist's Record (vi., 173-181). It dealt with the genus *Smerinthus*, and the technical problem which he desired to solve was the relation of the genus to allied genera.

Bacot contributed to the tenth volume of the "Entomologist's Record" a complete morphological study of the British Liparid Moths; it is perhaps the most compact of his morphological studies, in the precise and methodical description of the larval stages, is a good example of what may be called the school of Chapman. The late Dr. T. A. Chapman, one of the most distinguished Lepidopterologists of our time, had an important influence on Bacot's scientific development; their long friendship was without a break and their scientific collaboration close.

From the date of his first publication to his initiation to medical entomology Bacot's interests were balanced between morphological and genetic research. Undoubtedly the latter appealed more to him, but he probably devoted more time to the former, thereby acquiring a technical dexterity in the manipulation of small objects, and a power of exact description, which were to prove of great value to him later.

Bacot's last important contribution to pure lepidopterology was, however, concerned with genetics; this was the paper by Bacot and Prout communicated to the Royal Society in 1909. Bacot's chief published work on pedigree breeding had been done on *Lasiocampa quercûs* and *Triphoena comes*. In the former species he had found that two races from the same geographical region when crossed produced progeny which segregated into the parental forms, but that this did not occur when the southern French variety, *meridionalis*, was crossed with the Scottish variety, *callunae*.

Bacot and Prout carried out further experiments with a Geometrid moth, *Acidalia virgularia*, carried on for ten generations, involving the examination of over five thousand specimens that had been bred.

The joint research with Prout was Bacot's last important contribution to pure lepidopterology; the main stream of his intellectnal life was soon to be diverted.

Before the publication of the research on *Acidalia*, Bacot had made the acquaintance of some prominent workers in the field of scintific medicine. He had been introduced to Prof. Leonard Hill and Prof. Bulloch, and, in 1908, gave an account of his breeding experiments in the Physiological Theatre of the London Hospital Medical College, one of a course of lectures on heredity in which members of the College staff collaborated. This was the first time he addressed a medical audience.

In 1909, I was employed by the Advisory Committee for Plague Investigations to analyse statistics of plague incidence; this commission and my appointment to the staff of the Lister Institute at the end of 1909, brought me into touch with the principal workers on the subject, Lamb, Liston, Boycott, C. J. Martin, Ledingham, and Rowland. I discussed questions of plague with Bacot, and used to bombard him with questions about the ways of fleas, and he would suggest possibilities of bridging over gaps in our knowledge.

Within a few months our conversations had a practical result. I learned that the Advisory Committee were looking for someone who could study the rat flea from other aspects than the morphological, and introduced Bacot to Prof. C. J. Martin.

The gulf between the certificated professional and the amateur is not so wide in England as elsewhere, still it exists. Obviously no committee administering public funds could have been expected to invite a man of 44, whose name was unknown outside a narrow circle, to throw up his means of living and become a wholetime investigator. All that could be done was to invite Bacot to take up the study of fleas in his spare time, the Committee to bear all expenses and pay an honorarium. The terms offered by the Committee were liberal, but Bacot feared that time was lacking. However, after a little hesitation, he accepted the proposal. An R.A.M.C. reservist was sent down to Loughton, and with his help—he proved to be an ideal assistant—Bacot turned a derelict stable into a laboratory, collected some apparatus and a few fleas and set to work.

The time at Bacot's disposal was from seven in the evening to eight in the morning, five days a week; five hours more on Saturdays and such parts of Sundays as I could not induce him to devote to forest walks. In this time he had to conquer all the difficulties of a new technique unguided by the experience of others. The difficulties of his main research were sufficiently great, but in this he had only the same kind of obstacle to surmount as in the breeding experiments on moths, from which he had learned much. But, as a side line, he took up the tracing of an infection from one stage of life history to another, working with the house fly and *Bacillus pyocyaneus.* The tyro in a properly equipped laboratory is familiar with the difficulties of pure culturing. In an old wooden stable the omnipresence of moulds makes the work exasperatingly difficult, particularly if one has to discover for oneself all the little manipulations which the more fortunate student has demonstrated to him by a teacher.

The first results were published in 1911. More appeared in 1914.

Questions had been put forward by the Advisory Committee. These were answered fully by Bacot. He worked out the various points of each problem with a careful attention to detail that ensured the success of the different experiments that he made during his researches. The most valuable section of the memoir is that which deals with the effects of varying physical conditions on the length of the larval and cocoon stages.

The first draft of the report on the bionomics of rat fleas was Bacot's

Habilitationsschrift, and admitted him to the circle of recognised research workers. In December, 1911, he was appointed Entomologist to the Lister Institute of Preventive Medicine, and began work there a few months later.

The two years and six months ending in August, 1914, were a time of perfect happiness for Bacot. The Lister Institute was an ideal home for him. Of course he would have been happy and respected in any society of intelligent human beings, but the staff of the Lister were precisely the kind of people to suit him. All of them had enjoyed a more regular scientific training than he, but they had been trained in different schools, and many of them had seen much of the world, so there was none of that donnishness which is apt to make the entrance of an "outsider" into the society of men all educated on the same lines a little irksome.

For the first time in his life Bacot had command of good tools, and learning how to use them was a perfect joy. I think the tool that gave him most pleasure was a Zeiss binocular dissecting microscope, and with Minchin for his instructor his progress was rapid. In ordinary microscopy he soon became expert. Most students will know the value of a compliment I once heard C. J. Martin pay. He said, "Bacot never sees what isn't there."

Bacot had plenty of interests outside his laboratory, or rather the habits of his mind which gave him pleasure in his laboratory found happiness everywhere. He had a very good time at Loughton. Demographically it is a London suburb, inhabited by a fair random sample of middle class people. We are not really such mercenary fools as "Punch" artists and didactic novelists make out, but we do think that the owner of a Rolls-Royce is usually better worth cultivating in a social way than the push cyclist. We feel that a bearded, hatless man, who strides past our parish church on Sunday morning at the hour of early Communion, pushing an exceptionally noisy wheelbarrow charged with manure, is not normal. When this disturber of the Sabbath peace also supports the most extreme "socialistic" doctrines in a local debating society, those who know us only through literature, would not expect him to be popular. But the practical justification that Bacot's life provided for what we regarded as his eccentricities was accepted. A neighbour of mine said that Loughtonians fell into two classes—those who got on with Bacot, and those who didn't. I have not been able to identify half a dozen members of the latter class. Perhaps, after all, we are subtle enough to distinguish between selflessness and affectation.

The volume of the "Journal of Hygiene" which contained Bacot's revised memoir on the bionomics of the rat fleas, also contained the paper by himself and C. J. Martin on the mechanism of infection. To this paper the frequently abused term classical may fairly be applied.

As long ago as 1897 it had been inferred by Ogata that the flea was implicated in the spread of the plague. Simond, in 1898, performed experiments which indicated that rats could be infected by fleas, and his work was confirmed and extended by Gautier and Raybaud in

1902-3, and Verjbitski in 1904. The workers of the Commission for the Investigation of Plague in India (1906-7), proved that fleas were the chief and perhaps the only means of transmission, but were unable to decide what was the precise mechanism. Bacot and Martin set out to ascertain whether infection could be conveyed by the act of sucking. Fleas were fed on infected mice and then allowed to bite clean rats under conditions which precluded the contamination of the rat's skin with the excreta of the flea. It soon appeared that infection could be conveyed in this manner.

This brilliant investigation is no doubt the one by which Bacot's name will be most familiarised to the scientific public. Self evidently the credit for its planning and execution is only in part his, while the literary form of the paper is the work of a more skilful writer.

Two other papers of this period have to be mentioned as of importance to the student of epidemiology. Bacot's "Observations on the Length of Time that fleas carrying *Bacillus pestis* in their alimentary canals are able to survive in the absence of a host and retain the power to re-infect with plague," are of much interest.

It was experimentally proved that an infected fasting flea could continue to transmit disease after an interval of more than six weeks. Whether this were the maximum could only be determined by a very long series of experiments; actually in Bacot's series no success was scored after a longer interval.

The other paper was on the survival of bacteria in the alimentary canal of fleas during metamorphosis, and is an application to the flea of the principle involved in Bacot's first printed medico-entomological paper. In no case was Bacot able to demonstrate the persistence in the imago of an infection acquired in the larval stage, a result in rather striking contrast with the success won by himself, by Ledingham, by Graham-Smith, and by Nicholls, in contaminating adult diptera by infection in the larval stage.

In South-East Suffolk, in 1906-7, large numbers of dying rats were noticed. Then in January, 1907, six people out of eight in one house died from what seemed to be pneumonia. Three years later, in the same district, five persons out of eight in one house died within a few days of each other. It was said that the dwelling was infested with fleas, but no suspicion was aroused that there was any connection between them and the deaths. Four more similar deaths occurred in the middle of September, 1910, within a mile of the place where the dead rats had been noticed. Suspicion was now aroused, and on examination several plague stricken rats were found. A sailor died in 1911 in Shotley barracks, with similar symptoms to those of the former victims. In 1914 plague bacillus was detected in ferrets, rat, and a rabbit, but no deaths occurred among the human population until 1916, when there were two more. The epizootic lasted apparently for twelve years, but yet was only responsible for eighteen human deaths during that period. Why? Had Bacot had the opportunity to investigate he might have found the explanation.

It is highly probable that the substitution of the brown for the black rat has been an epidemiological advantage; but the brown rat did not reach England (apparently in or about 1828) until a generation after the extinction of plague as a reigning epidemic.

Bacot's opinion was that success depended upon an adjustment of small details, only to be ascertained by a minute study of natural conditions, by attending to the ways of beasts and insects in the field. It was planned that he should undertake such a study of East Anglia. The late Dr. Bruce Low was particularly anxious that he should do this. But more urgent work had to be performed, and it is idle to speculate whether he would have discovered anything. Still one regrets that he did not have the opportunity to look into the matter at the time of the last human cases.

Bacot published three other memoirs, inspired by his association with the work of the Advisory Committee on Plague. One deals with the practical value of vapours as inseticides. He concluded that napthalene was the most generally effective agent for the destruction of fleas in all stages of their life-history. A second, written in collaboration with the late Dr. W. G. Ridewood, is an exact morphological study of flea larvae. The third paper deals with the mechanism of infection with plague by bugs.

Bacot, like Verjbitski, succeeded in infecting rodents by the bite of bugs, and he gives a careful account of the mechanism. He found that a meal of septicaemic blood was fatal to newly hatched larvae, but that an adult was capable of re-infecting a mouse after forty-eight days' starvation. The paper is also, I think, of interest from the biographical point of view in its improvement in form; he never became an attractive writer, but his more recent papers are better knit together than his earlier ones.

This work filled Bacot's time from his appointment to the Lister Institute to the summer of 1914.

In the summer of 1914 he proceeded to West Africa to study the bionomics of mosquitoes and their connection with yellow fever. He spent just over a year in Freetown, and the results of his investigations there are contained in the Report published by the Yellow Fever (West Africa) Commission. He first started to study with his usual thoroughness the eggs of mosquito, *Stegomyia fasciata*, and he carried out a large number of experiments and a long series of observations on them. Each question that cropped up was fully dealt with, and the result was a large mass of information concerning the breeding and life of the insect in its different stages. He showed that the hatching of eggs cannot normally occur in sterile water, so that the ordinary methods of purification of water from bacteria will be of service in the reduction of the mosquito population.

A very good judge, Prof. A. E. Boycott, thinks that it is by this beautiful research Bacot would wish to be remembered.

Bacot's war work began immediately after his return from West Africa. He had been busy with lice for some months when he wrote to me (on February 1st, 1916)—"I am still working out the lice, it is a slow itching drudgery but quite interesting in its way. I must say that I wonder the troops put up with it. I should scratch on parade—but perhaps the men do."

Bacot dealt with lice exactly as he had treated fleas and mosquitoes. He adapted his experimental methods to suit the subjects; he did not confine his experiments to those subjects which happened to survive some technique convenient for the experimenter. His war-time publications were numerous but mostly short practical notes. The fullest account of his work is given in a paper read by him to the Section of Epidemiology and State Medicine of the Royal Society of Medicine in 1918.

Bacot summarised the bionomic characters of lice which are of sanitary importance in various propositions, the truth of which he established by a long series of experiments.

He considered the most suitable method of de-lousing clothes was, wherever practicable, by exposure to dry heat. He found that exposure to 55°C. for thirty minutes was ample for the destruction of both nits and adults.

He devised a method of accurately testing the efficiency of insecticides and employed it in a long series of experiments. Of quickly acting remedies napthalene proved the best. It should be used in conjunction with an emulsifying agent.

Bacot, as Honorary Consulting Entomologist to the Army Medical Department, was able to prevent a good deal of waste of money and more disappointment. Insecticides and vermin killers fell to his lot for judgment, rejection or acceptance.

Most of Bacot's time between 1916 and 1918 was devoted to the subject of the prevention of lousiness, but before the end of the war he had begun work upon the aetiological role of the louse in disease transmission. In the first instance his attention was specially directed to Trench Fever; from 1919 to the end he specialised in Typhus.

Dr. Arkwright has described the scientific work which occupied the last years of Bacot's life. There only remains to add a few words on personal aspects. Bacot suffered not less than the rest of us from the post-war reaction; he had never indeed cherished dreams of a new heaven and earth to follow victory, but his temperament was not that of the prophet who can draw comfort from the fulfilment of his forebodings. I think he suffered much, and his comments upon public affairs were bitterer than before. But he was not unhappy, for he never lost the key of fairyland given him in 1911.

His visit to Poland in 1920 was not, for various reasons including an attack of Trench Fever, an agreeable one. His last journey began under happier auspices. His letters from shipboard were in his earlier vein. The voyage down the Mediterranean delighted him; the laboratory and colleagues at Cairo were thoroughly congenial, and the last letter I was to have from him the most cheerful of all. That letter was written on March 24th, 1922. Within a few days he was taken ill. An oblivion soon followed. In his delirium he spoke only of the research. On April 12th he died. His body was carried to the grave, in the British Cemetery of old Cairo, by his friends and colleagues from the Laboratories, both British and Egyptian.

Bacot cannot live for future generations as John Ray and Gilbert White live; he has left behind no book which will charm by its literary quality after the discoveries it records have become incorporate in the general stock of knowledge. But his personal influence will not die with him. Those who worked beside him, and loved him, will often be restrained in moments of petulance by a memory of some act of kindness, by a recollection that a great researcher could be as selfless as a child. Any scientific man tempted to measure his own services against their rewards in income or fame, may pause to think how little made this man happy.

BACOT MEMORIAL EVENING

In response to a desire on the part of many members, the Council has decided to perpetuate the memory of our distiguished late colleague, Mr. Arthur W. Bacot, by dedicating to that purpose the second meeting in April, which is that nearest to the anniversary of his death. This meeting will be described annually on the syllabus as the "Bacot Memorial Evening."

NOTES ON COLLECTING IN 1923

By E. A. COCKAYNE, M.A., D.M., F.R.C.P., F.E.S.

Read before the Society on November 6th, 1923.

THE first observation of interest was made at our Field Meeting on Wimbledon Common, on April 8th. On a small clump of low birches we found thousands of *Lycia hirtaria*. I counted 50 on one small trunk and 38 on one side of another within two feet of the ground. Although they were not so numerous on every trunk, many were quite as crowded. On some trees they sat with wings overlapping, and I saw a newly emerged female, in its effort to find a foot-hold, set eighteen more in motion before it was successful. Most of the available cracks were full of eggs and females were laying on the smooth bark. Indeed one was depositing a batch of eggs between the fore- and hindwing of another. We saw comparatively few elsewhere on the common. The birches, on which they swarmed, have been surrounded by huts erected during the war, and only recently demolished. These may have protected them from birds. I have always thought that the abundance of this species in large towns such as Leeds and London, is due to the absence of some birds, which prey on them in the open country.

Looking for varieties I found a pair of unusually pale ones, the male being particularly striking, and three melanic ones. The male, unfortunately worn, has a pale subterminal line, but the rest of the insect is so heavily dusted with black scales that no other markings are visible. The two females are not quite so dark, but are much blacker than any I have seen in previous years.

Before leaving the subject of *hirtaria* I should like to record an olive green larva marked on each segment with large whitish patches slightly tinged with green. It was beaten from ash at Horsley. I have never met with this form before although I have had many hundreds of London larvae.

A box of sallow catkins, gathered by my mother in East Aberdeenshire, produced about 200 larvae of *Eupithecia tenuiata*, 120 *Xanthia* larvae, chiefly *lutea*, with some *fulvago* and a few *circellaris*, five *Ypsipetes elutata*, and one *Oporabia dilutata*. Thirty-seven typical *fulvago* and six var. *flavescens* emerged. The result was disappointing, because *flavescens* is said to be very common further down the coast at Montrose.

The prolonged spell of cold weather in May and June seemed to exert an adverse influence on the whole season. I think most of us will agree that even the commonest species, especially the Geometers, with few exceptions, were very scarce. Unfortunately I chose May for my holiday in south Cornwall, and it was quite spoilt by cold winds, fog, and rain.

Larvae of *Lasiocampa trifolii* were locally common along the coast, and were fond of resting during the day on the top of the weather beaten cushions of heather and the stunted gorse bushes. They feed chiefly at night, but two were seen in the day time eating a species of Aira. Barrett states that it was a common species on the Cornish coast in 1845, but has become scarce or disappeared altogether. Many larvae died, but about thirty imagines were bred, all very dark coloured. They are much darker than my specimens from the Lancashire coast.

The most interesting insect met with was *Pararge megera*, but it was getting past its best and I took no interest in it until too late. Specimens of both sexes with extra spots were very common. I think one out of every three or four had one or more extra spots, whereas in Lincolnshire the proportion is one in 50 or 60. On the forewing of normal *megera* there is a tiny spot in cell 6, and a large ocellated one in cell 5, the posterior part of which encroaches on cell 4. In some of my specimens this spot has a second ocellus in cell 4. In one female this spot is so large that it spreads over into cell 6 in front and touches nervure 4 behind.

I regard the spots with two ocelli as fused double spots, and I think the following facts prove it. In some specimens the spots are seen to be partially separated, and one female with a small ocellated spot in cell 5 has another small one in cell 4, widely separated from the first. In several males, and in one or two females, there is a spot with ocellus in cell 3; in others this is represented by a mere dot. One female has an additional blind spot in cell 2. The hindwing shows the same tendency. In addition to the usual ocellated spots in cells 1, 2, 3, and 4, some have a small blind spot in cell 5, on one or both sides.

It is well known that an increased number of spots is common in *Epinephele tithonus*, and to a less extent in *E. jurtina* in Devon and Cornwall, but I was not aware that it occurred in *P. megera*. *Megera* with this peculiarity are commoner in Ireland than in the East of England, and *jurtina* may have the normal spot increased in size, or there may be additional spots. One wonders how much the spotting is influenced by the climate.

Dr. Jordan's discovery of *Anaitis efformata* as a common English species stimulated me to look for it, in the hope of breeding it and *plagiata* side by side. The cold spring prevented this. Only a single male of each was caught, and no female of either.

In August I found *efformata* plentiful in the Chilterns and at Horsley. Eggs were laid freely on *Hypericum perforatum*, usually singly, but sometimes in pairs, on the petals, sepals, and small leaves. They are pale cream in colour, smooth, ovoid and flattened on the side by which they are attached. The newly hatched larva is long and thin, whitish with a narrow blackish dorsal and subdorsal line, and another interrupted line below the spiracles. It has a narrow white collar. The head is pale yellowish-brown with a black spot on the lower part of each lobe and black mandibles. The legs are speckled with black. The larvae fed readily on perforated St. John's Wort. In their third instar they were chocolate or putty coloured with the dark markings showing very indistinctly. At this stage they died, although kept out of doors on growing plants. The chief differences between *efformata* and *plagiata* are the smaller size, more indistinct markings and shorter abdomen of the former. The male *plagiata* has long narrow valves, whereas in *efformata* they are short and blunt. The difference in the genitalia, which is obvious to the naked eye, is even more striking in microscopical preparations.

The geographical distribution of the two species is still uncertain. *Efformata* occurs in Kent, Hants, Dorset, Surrey, Oxfordshire, Bucks, and Herts, but I do not think it extends very far north. All my specimens of *Anaitis* from Rannoch and Sheffield are *plagiata*, and so are those which I have seen in other collections from the North of England and Scotland. In Surrey and Bucks *efformata* appears to be much the commoner species. Yet before Dr. Jordan's discovery most collections contained very few examples of it. I suppose this is due to the careful selection of large and well marked specimens for the cabinet.

PRELIMINARY OBSERVATIONS ON THE BRITISH VANESSIDS

ON April 17th, 1923, Mr. H. B. Williams read a paper on this subject. Following a few general observations on the British species and their distribution, the paper dealt with two subjects in detail, the method of pupation and the parallel and convergent variation of *Aglais urticae* and *Vanessa io*. Dealing with the first subject the lecturer referred to the errors of Réamur and Buckler, and drew attention to the careful work of Osborne, Edwards, and the late Dr. Chapman, by which the method of suspension of the insect during the critical moments of pupation was solved. It appeared that no satisfactory explanation of the method by which the newly exuded pupa, after withdrawing its tail from the larval skin, rises to the pad of silk to which it is finally attached, in apparent defiance of the laws of gravitation, had yet been forthcoming. The second portion of the paper dealt with the markings of the two species referred to in detail, and with the relationships of such forms as *Vanessa io* ab. *informis*, Rss., and it was suggested that the facts pointed to the probability of *V. io* having developed from a "tortoiseshell" facies, with some resemblance to *Aglais urticae*.

Mr. Williams' paper has appeared in full in "The Entomologist's Record" for 1923, so that journal should be consulted for further particulars.

THE BIRDS OF EPPING FOREST

A SUMMARY OF EIGHT ANNUAL REPORTS

THIS list comprises all the species recorded in eight annual reports, embracing a period from 1916 to 1923 inclusive. With the exception of 1923, which was compiled as usual, although not printed, the reports were published annually in the society's Transactions. In the course of the eight years' work 98 forms have been identified. Of this number 61 have nested at some time or other, 55 regularly. A division of the total number of forms into categories according to their movements, shows that 39 are residents, 18 summer visitors, 15 winter visitors, 2 passage migrants, and 24 unplaced. Of the unplaced birds twelve are included on the strength of one occurrence.

The status of each form is based on the accumulated evidence of the eight annual reports.

It will be assumed that the descriptions, resident and summer visitor, connote breeding, unless otherwise stated.

The almost negligible number of passage migrants and the very few rarer birds which have been recorded, indicate that there is very little migration across the area. The regularity of the bird-life is a feature which the collation of the various reports renders prominent. To the student of birds Epping Forest's period is that of spring, when the wood is tenanted by the many summer visitors. A walk through the glades amidst the wonderful chorus, on a May morning, is an experience which is not easily forgotten.

A strong plea is made for a much stricter measure of protection for the birds, especially during the nesting season.

The intention of accepting records only from the land under the control of the Corporation of the City of London, as stated in the original introduction, has been carried out, so it may be claimed that the list is a guide to the birds of what is known to-day as Epping Forest.

Carrion-Crow (*Corvus c. corone*, L.).—An increasing resident.

Hooded Crow (*Corvus c. cornix*, L.)—One occurrence, November, 1919.

Rook (*Corvus f. frugilegus*, L.).—An irregular visitor throughout the year. Only rookery, Wanstead Park, which is decreasing.

Jackdaw (*Corvus monedula spermologus*, Vieill.).—Resident. Breeding stations, High Beach Church and Warren Hill.

Magpie (*Pica p. pica*, L.)—A very rare visitor. Recorded in 1917, 18 and 20.

British Jay (*Garrulus glandarius rufitergum*, Hart.)—An abundant resident, not decreasing.

Starling (*Sturnus v. vulgaris*, L.).—A common resident. Woodpecker holes are often used as nesting sites, apparently without adverse influences on these species.

Greenfinch (*Chloris c. chloris*, L.).—A resident, which is common as a winter visitor, but much less so in nesting season.

Hawfinch (*Coccothraustes c. coccothraustes*, L.).—A not uncommon resident. The presence of this species in numbers is a strong feature of the bird-life, the abundance of the hornbeam being the probable cause.

British Goldfinch (*Carduelis carduelis britannica*, Hart.).—A regular, but scarce, winter visitor.

Siskin (*Spinus spinus*, L.).—An annual winter visitor to the alders at Highams Park Lake.

House-Sparrow (*Passer d. domesticus*, L.).—A plentiful resident in suitable places.

Tree-Sparrow (*Passer m. montanus*, L.).—An uncommon resident. Nesting stations, Chingford Wood, Barn Hoppit, and Warren Hill.

Chaffinch (*Fringilla c. coelebs*, L.).—A very common resident.

Brambling (*Fringilla montifringilla*, L.).—A sparing winter visitor, but very common in some years, as 1922-3, when food supply was abundant.

Linnet (*Acanthis c. cannabina*, L.).—An uncommon forest bird, recorded as nesting.

Lesser Redpoll (*Acanthis linaria cabaret*, P. L. S. Mull.).—A common winter visitor, usually found on the birches and alders. An occasional pair may stay to nest.

British Bullfinch (*Pyrrhula pyrrhula nesa*, M. and I.).—A common resident.

Yellow Hammer (*Emberiza c. citrinella*, L.).—A not very common resident on the open spaces.

Reed-Bunting (*Emberiza s. schoeniclus*, L.).—Chiefly a winter visitor, to be found where there are tracts of the grass, *Molinia varia*. Had almost entirely disappeared in 1922, which fact may have some association with the drought of 1921. Normal status regained in 1923.

Sky-Lark (*Alauda a. arvensis*, L.).—A common resident on the plains.

White Wagtail (*Motacilla a. alba*, L.).—One record only, in 1921.

Pied Wagtail (*Motacilla a. yarrellii*, Gould).—A *less* common resident. In some winters parties, running into hundreds, come in to roost for the night among the reeds round the ponds.

Grey Wagtail (*Motacilla c. cinerea*, Tunst.).—A scarce winter visitor, regularly so to the Sewage Farm, Hatch Plain.

Yellow Wagtail (*Motacilla flava rayi*, Bona.).—One record, April, 1920.

Tree-Pipit (*Anthus t. trivialis*, L.).—A common summer visitor to the open spaces. Average date of arrival April 14th.

Meadow-Pipit (*Anthus pratensis*, L.).—A regular but decreasing winter visitor.

British Tree-Creeper (*Certhia familiaris brittanica*, Ridg.).—A well established resident.

British Nuthatch (*Sitta europaea affinis*, Blyth).—A resident, mainly recorded from Hill Wood.

British Goldcrest (*Regulus r. anglorum*, Hart.).—A common winter visitor. After the severe winter of 1917 the numbers of this species were seriously reduced. The normal status was regained by 1920.

British Great Titmouse (*Parus major newtoni*, Prazák).—An abundant resident.

British Coal Titmouse (*Parus ater britannicus*, S. and D.).—A common resident.

British Marsh Titmouse (*Parus palustris dresseri*, Stej.).—A common resident.

British Blue Titmouse (*Parus caeruleus obscurus*, Prazák).—An abundant resident.

British Long-tailed Titmouse (*Aegithalos c. caudatus roseus*, Blyth).—A common resident. No diminution in numbers was noticed after the severe winter of 1917.

Great Grey Shrike (*Lanius e. excubitor*, L.).—One occurrence, winter 1919-20.

Red-backed Shrike (*Lanius c. collurio*, L.).—A not uncommon summer visitor. Frequents the open spaces. Average date of arrival May 10th.

Spotted Flycatcher (*Muscicapa s. striata*, Pall.).—A not uncommon summer visitor. Average date of arrival May 13th.

Whitethroat (*Sylvia c. communis*, Lath.).—A common summer visitor. Average date of arrival April 24th.

Lesser Whitethroat (*Sylvia c. curruca*, L.).—A fairly common summer visitor. Average date of arrival May 1st.

Garden Warbler (*Sylvia borin*, Bodd.).—A common summer visitor. Average date of arrival May 6th.

Blackcap (*Sylvia a. atricapilla*, L.).—A common summer visitor. Average date of arrival April 23rd.

Grasshopper Warbler (*Locustella n. naevia*, Bodd.).—Recorded in 1921 only. No nest found.

Reed-Warbler (*Acrocephalus s. scirpaceus*, Hermann).—Only one occurrence, June 2nd, 1920.

Willow-Warbler (*Phylloscopus t. trochilus*, L.).—The most numerous summer visitor. Average date of arrival April 9th.

Wood Warbler (*Phylloscopus s. sibilatrix*, Bech.).—A local summer visitor, probably increasing. Average date of arrival May 2nd.

Chiffchaff (*Phylloscopus c. collybita*, Vieill.).—A common summer visitor. Average date of arrival April 4th.

Mistle-Thrush (*Turdus v. viscivorus*, L.).—A fairly common resident.

British Song-Thrush (*Turdus philomelos clarkei*, Hart.).—A very common resident, but scarcer in winter.

Redwing (*Turdus musicus*, L.).—A winter visitor. The appearance of this species is controlled by the food supply, and consequently its movements are very uneven. For example, 1922 was a notoriously good fruit year and redwings were strikingly numerous. On the other hand 1923 was as bad a fruit year as 1922 was good, and redwings were almost entirely absent.

Fieldfare (*Turdus pilaris*, L.).—A winter visitor, but much less numerous than the redwing. The remarks on the movements of the redwing also apply to the fieldfare.

Blackbird (*Turdus m. merula*, L.).—A common resident. Numbers very much increased in winter.

Redstart (*Phoenicurus p. phoenicurus*, L.).—A common summer visitor. The many nesting-holes provided by the pollard trees are probably the reason of the prevalence of this species in the Forest. Average date of arrival April 17th.

British Redbreast (*Erithacus rubecula melophilus*, Hart.).—An abundant resident.

Common Nightingale (*Luscinia m. megarhyncha*, C. L. Brehm).—A common summer visitor. If the volume of song can be taken as a guide, the numbers of this species vary from year to year. Average date of arrival April 22nd.

British Stonechat (*Saxicola torquata hibernans*, Hart.).—Recorded twice. Nested in 1921, and 2 ♂s and 1 ♀ recorded from Fairmead Bottom, on September 29th, 1923.

Whinchat (*Saxicola r. rubetra*, L.).—A scarce spring and autumn bird of passage.

Wheatear (*Oenanthe o. oenanthe*, L.).—A scarce spring and autumn bird of passage.

British Hedge-Sparrow (*Prunella modularis occidentalis*, Hart.).—A common resident.

Wren (*Troglodytes t. troglodytes*, L.).—An abundant resident.

Swallow (*Hirundo r. rustica*, L.).—A summer visitor, not too common, but more so at time of autumn migration. Average date of arrival April 20th.

Martin (*Delichon u. urbica*, L.).—As swallow. Average date of arrival May 3rd.

Sand-Martin (*Riparia r. riparia*, L.),—An occasional bird may be seen during the summer.

British Great Spotted Woodpecker (*Dryobates major anglicus*, Hart.).—A common resident, probably increasing. The prevalence of this handsome species is a feature of the Forest.

British Lesser Spotted Woodpecker (*Dryobates minor comminutus*, Hart.).—A well represented resident, although less numerous than the great spotted.

Green Woodpecker (*Picus viridis virescens*, C. L. Brehm.).—A common resident, more partial to the open spaces than the other two woodpeckers.

Wryneck (*Jynx t. torquilla*, L.).—Only records two occurrences at end of April, 1918.

Cuckoo (*Cuculus c. canorus*, L.).—A common summer visitor. Average date of arrival April 21st.

Swift (*Micropus a. apus*, L.).—A summer visitor, but no nesting localities known. Average date of arrival May 6th.

Nightjar (*Caprimulgus e. europaeus*, L.).—A very local summer visitor. Average date of arrival May 10th.

Kingfisher (*Alcedo atthis ispida*, L.).—A resident, but not numerous, more often seen in winter.

Barn-Owl (*Tyto a. alba*, Scop.).—Recorded twice, in January, 1916, and February, 1922.

British Tawny Owl (*Strix aluco sylvatica*, Shaw).—A common resident.

Little Owl (*Carine noctua mira*, Witherby).—Recorded once only, September, 1921.

Sparrow-Hawk (*Accipiter n. nisus*, L.).—Decidedly scarce. Recorded as nesting successfully in 1921.

Kestrel (*Falco t. tinnunculus*, L.).—Regularly hunts in the Forest, but apparently nests outside. One nesting record reported near Theydon golf links, June, 1923.

Mute Swan (*Cygnus olor*, Gmel.).—The Forest swans must be described as wild birds. Nesting localities, Highams Park lake and Barn Hoppit pond.

Mallard (*Anas p. platyrhyncha*, L.).—A common resident, with much augmented numbers in winter.

Teal (*Querquedula c. crecca*, L.).—One record, one seen by Keeper Stubbs on Strawberry Hill pond, August 7th, 1923.

Shoveler (*Spatula clypeata*, L.).—One record, one seen by Keeper Stubbs on Strawberry Hill pond, September 3rd, 1923.

Pochard (*Nyroca f. ferina*, L.).—A winter visitor recorded every year to and including 1921, but not since.

Tufted Duck (*Nyroca fuligula*, L.).—A winter visitor. One nesting record in 1916. This species has entirely disappeared from Connaught Water, where it was seen regularly in 1916 in flocks up to 50. It is still recorded in numbers from Wanstead.

Heron (*Ardea c. cinerea*, L.).—The Wanstead Park heronry provides the most important feature of the bird-life of the woodland. Number of nests per annum :—1916, 72 ; 1917, 60 ; 1918, 56 ; 1919, 54 ; 1920, 58 ; 1921, 69 ; 1922, 61 ; 1923, 58.

Woodcock (*Scolopax r. rusticola*, L.).—A scarce winter visitor.

Jack Snipe (*Lymnocryptes minimus*, Brunn.).—One record only, in 1916.

Common Sandpiper (*Tringa hypoleucos*, L.).—Two records only, both from Connaught Water, May, 1917, and April 27th, 1923.

Green Sandpiper (*Tringa ochropus*, L.).—One record only, December, 1920.

Curlew (*Numenius a. arquata*, L.).—One record only, September, 1921.

Lapwing (*Vanellus vanellus*, L.).—Occasional flocks seen flying over, but do not often settle in Forest area.

Black-headed Gull (*Larus r. ridibundus*, L.).—An irregular winter visitor, and by no means common.

Little Grebe (*Podiceps r. ruficollis*, Pall.).—Not common. Occasionally recorded in winter. Nested on Eagle Pond in 1921 and 1923, and Wake Valley pond in 1923.

Moor-Hen (*Gallinula c. chloropus*, L.).—A common resident.

Coot (*Fulca a. atra*, L.).—A scarce winter visitor. One nesting record, Wake Valley pond, 1923.

Stock-Dove (*Columba oenas*, L.).—A scarce Forest bird.

Wood-Pigeon (*Columba p. palumbus*, L.).—A common resident, with varying increase of numbers in winter.

Turtle-Dove (*Streptopelia t. turtur*, L.).—A scarce summer visitor.

Pheasant (*Phasianus colchicus*, L.).—A straggler to the Forest. May breed occasionally.

Partridge (*Perdix p. perdix*, L.).—As pheasant.

ARCHAEOLOGICAL INSPECTIONS

St. Giles, Ickenham, Middlesex.—Visited March 24th, 1923.

OUR second visit of inspection to this little church proved of great interest.

We noted the importance of the recent restorations which brought to light a roof over the nave, composed of timber construction, now open, owing to the removal of the plaster.

The variety of the window tracery was remarked upon.

Particular attention was paid to the recently discovered mausoleum with vertical coffin recesses. The comparison of the brickwork in this Jacobean portion with that of the adjoining Elizabethan annexe, proved highly interesting.

The whole church is fully described in our record, and the original work done by members in this connection is of value, for the extant descriptions of this interesting building are far from complete or up to date.

St. Michael's, Mickleham, Surrey.—Visited April 21st, 1923.

This church, which we informally visited, consists of much that is new. Rebuilding rather than restoring has evidently been the order of the day, a fact which we had great reason to deplore.

However the Norman tower at the west end, the later Norman chancel arch, and parts of the chancel of the same period, were carefully examined with much interest.

St. Catherine, Merstham, Surrey.—Visited May 5th, 1923.

Hard by the Brighton road, set well upon a knoll, stands the striking church of St. Catherine's.

At our previous visit it was thought that a record should be made at some future time, and this view was found to be fully justified when at our second visit a complete record was taken.

Every part of the church teems with interest, and each is fully noted in our record.

The plan is fully developed with a beautiful Early English tower at the west end. Much of the handsome nave is of the same period, though portions of the earlier Norman period are to be seen. The north chapel dates from the year 1450, and the south chapel is some 50 years later. The south porch is about 1390, and other features, which cannot be referred to here at length, make the church one which should be visited—and our record of it read—by any who do not know the building.

St. John Baptist, Mucking, Essex.—Visited July 21st.

There are some interesting Early English details in this church—lancet windows, purbeck shafts, sedilia and double piscina.

The finely carved Transition cap, alone in its glory, in the nave, is but a fillip to our vain regrets at recent ruthless "restorations."

The mediæval remains, however, were the source of a good deal of profitable discussion, and a very illuminating history of the building was given by the vicar, who led the meeting on this informal but very interesting occasion.

St. Helen, Cliffe-at-Hoo, Kent.—Visited October 13th, 1923.

We again visited this church, but on this occasion our object was to make a record. A large party attended (some members combined Rochester with this visit) and a comprehensive record is now in course of preparation.

It is scarcely possible to speak too highly of this small "cathedral," situated somewhat off the beaten track of Kentish churches, and our record, illustrated with a number of exceptional photographs, shows that all members were greatly interested.

The two chief dates are 1260 and 1350. The former refers to the nave, lower part of the tower, north and south transepts. The latter refers to the chancel and the windows in the aisles.

Some discussion took place as to the Saxon or Norman work on the north side of the north transept, south side of tower, and east side of tower. There is a room over the south porch.

We noted with approval the way in which the ends of the transepts had been restored, correcting a previous "restoration."

St. Bartholomew the Great, Smithfield.—Visited December 8th, 1923.

A large party visited this well known London church, and were conducted round in a very interesting way by one of the officials.

We were first shown the recently commenced restoration work towards the south end of the east side of the cloisters (the few bays of this eastern cloister, towards the north, having been restored some years ago). We were shown how carefully modern brickwork casing was being removed—a difficult work being well done.

We then passed through the "crossing," which is now the west end of the church. We noted the apsidal termination to the "choir"—which is now the main part of the church. The more recent lady chapel was inspected, also the crypt under it. We were all glad to visit once again this fine old bit of Norman London, and were reminded that this is the oldest church remaining in the Metropolis except for the chapel in the Tower.

H. S. Stowell, *Recorder.*

LIST OF MEMBERS

It is particularly requested that Members will inform the Secretary as soon as possible of any change of address

HONORARY MEMBERS

Grant, G. F. H., Beaumont Manor, Wormley, Herts. (Arch.)
Massey, Herbert, M B.O.U., F.E.S., Ivy Lea, Burnage, Didsbury, Manchester. (Lep., Orn., Ool.)

MEMBERS

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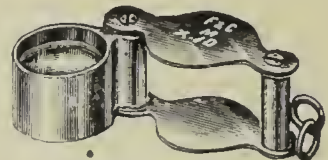

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